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GGSIPU Chemistry 2004

1. The solubility of CaF_2 is s moles/litre.then solubility product is :

 (a) s^2 (b) $4s^3$

 (c) $3s^2$ (d) s^3

2. If P,T, ° and R represents pressure,temperature,density and universal gas constant respectively ,then the molar mass of the ideal gas is given by :

 (a) $\frac{^\circ RT}{P}$ (b) $\frac{\rho T}{PR}$ (c) $\frac{P}{^\circ RT}$ (d) $\frac{RT}{^\circ P}$

3. The kinetic energy of a gas molecule is ….temperature :

 (a) Independent of (b) directly proportional to
 (b) inversely proportional to (d) direcly proportional to square root of

4. The ratio of rate of diffusion of SO_2(M = 64) and oxygen (M = 32) is :

 (a) 1:1 (b) 2:1

 (c) 1:2 (d) 1:1.414

5. An aqueous solution freezes at -0.186^0C ,then elevation in boiling point is : (K_b = 0.512,K_f = 1.86)

 (a) 0.512^0 C (b) 100.0512^0C

 (c) -0.0512^0C (d) none of these

6. 0.56 g of gas occupies 280 cm^3 at NTP,then its molecular mass is :

 (a) 4.8 (b) 44.8

 (c) 2 (d) 22.4

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7. The equivalent mass of Fe in FeO is :

(a) 56 (b) 28

(c) 36 (d) 18.66

8. Chemical equations convey quantitative information of the :

(a) Type of atoms/molecules taking part in the reaction
(b) Number of atoms/molecules of the reactants and product involbed in the reaction
(c) Quantity of reactant consumed and quantity of product formed
(d) None of the above

9. Which one of the following is ambiguous ?

(a) a mole of wlectron (b) a mole of sodium atoms

(c) a mole of potassium ions (d) a mole of hydrogen

10. In hydrolysis of a salt of weak acid and strong base, $A^- + H_2O \leftrightharpoons HA + OH^-$,the hydrolysis constant (k_h) is equal to

(a) $\frac{K_w}{K_a}$ (b) $\frac{K_w}{K_b}$

(c) $\sqrt{\frac{K_a}{C}}$ (d) $\frac{K_w}{K_a \times K_b}$

11. For a reaction of the type aA + bB → Products, the $\frac{d[A]}{dt}$ is equal to :

(a) $-\frac{d[B]}{dt}$ (b) $-\frac{1}{b} \times \frac{d[B]}{dt}$

(c) $-\frac{a}{b} \times \frac{d[B]}{dt}$ (d) $-\frac{b}{a} \times \frac{d[B]}{dt}$

12. In a mixture of 1g H_2 and 8g O_2, the mole fraction of hydrogen is :

(a) 0.667 (b) 0.5

(c) 0.33 (d) none of these

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13. In acid medium MnO^-_4 is reduced to Mn^{2+},by a reducing agent. Then the equivalent mass of $KMnO_4$ is given by :
(M = molecular mass)
(a) m/2 (b) M (c) M/5 (d) M/3

14. For the reaction
$$CH_3COOH_{(l)} + 2O_{2(g)} \rightleftharpoons 2CO_{2(g)} + 2H_2O_{(l)}$$
At 25° C and 1 atm pressure, Δ H = -874 kj.Then the change in internal energy (ΔE) is :
(a) -874 kj (b) -871.53 kj
(c) -876.47 kj (d) +874 kj

15. Radioactive substances emit γ-rays, which are :
(a) +vely charged particle (b) -vely charged particle
(c) massive particle (d) packet of energy

16. the number of α – and β- particles emitted in the reaction :
$$92^{U^{238}} \rightarrow 82^{Pb^{206}}$$
(a) $8\alpha,5\beta$ (b) $4\alpha,4\beta$
(c) $8\alpha,2\beta$ (d) $4\alpha,6\beta$

17. Coulomb is equal to …….
(a) Ampere X second (b) ampere x minute
(c) watt X second (d) volt X second

18. 1 mole of KB_r reacts with 1 mole of phosphoric acid to produce HB_r together with :
(a) K_3PO_4 (b) KH_2PO_4
(c) Br_2 (d) H_2O

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19. The equivalent conductances at infinite dilution for AC,BD and CD are 91,426.2 and 126.5 ohm^{-1} cm^2 g equ^{-1} respectively.Then the equivalent conductance of AB will be :

(a) 390.7 (b) 323.8

(c) 210.5 (d) 150.6

20. The specific conductivity of 0.1 N KCl solution is 0.0129 ohm^{-1} cm-^{1} .The resistance of the solutution in the cell is 100 phm.The cell constant of the cell will be :

(a) 1.10 (b) 1.29

(c) 0.56 (d) 2.80

21. The standard wmf of a cell Zn/Zn^{2+}|| Fe^{2+}/Fe, if electrode potentials for (Zn/Zn^{2+}) and (Fe^{2+}/Fe) are 0.763 v and -0.44 V respectively is:

(a) +0.323 V (b) -1.203 V

(c) +1.203 V (d) -0.323 V

22. The energy is required to release 1 electron from He$^+$ is :

(a) +54.4 eV (b) +13.6 eV

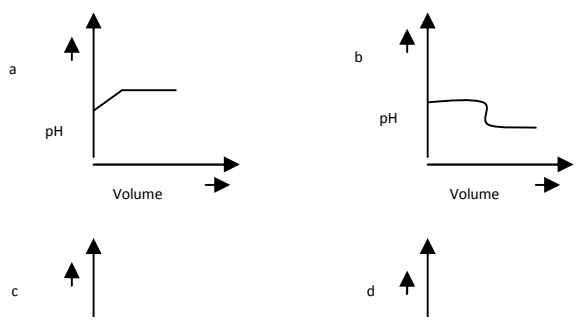
(c) +27.2 eV (d) cannot be predicted

23. $6^{C^{14}}$ is formed from $7^{N^{14}}$ in the upper atmosphere by the action of the fundamental particle :

(a) Position (b) neutron

(c) electron (d) porton

24. Which of the following plot reprasents the graph of pH against volume of alkali added in the titration of NaOH and HCl ?



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25. Which among the following isotope is not found in natural uranium ?

(a) $92U^{234}$ (b) $92U^{235}$

(c) $92U^{238}$ (d) $92U^{239}$

26. Which one out of the following statements is not correct for ortho and para hydrogen ?

(a) They have different boiling point
(b) Ortho from his less stable than para form
(c) They differ in the spin of their protons
(d) The ratio of ortho to para hydrogen increases with increase in temperature and finally pure ortho form is obtained

27. CO_2 is a gas ,while SiO_2 is a solid,but both are :

(a) Acidic (b) ionic

(c) discrete molecules (d) convalent containing π-bonds

28. Pure conc. HNO_3make iron passive, as the surface is covered with protective layer of :

(a) Fe_2O_3 (b) FeO

(c) Fe_3O_4 (d) $Fe(NO_3)_3$

29. Which of the following is not correct for D_2O?

(a) Boiling point is higher than H_2O

(b) D_2O reacts slowly than H_2O

(c) Viscosity is higher than H_2O at 25^0 C

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(d) Solubility of NaCl in it is more than H_2O

30. Ozone when resacts the potassium iodide solution liberates certain product,which turns starc paper blue.The liberated substance is :

(a) oxygen (b) iodine

(c) hydrogen iodide (d) potassium hydroxide

31. Red hot iron absorbs SO_2 giving the product :

(a) $feS + O_2$ (b) $Fe_2O_3 + feS$

(c) $FeO + FeS$ (d) $feO + S$

32. Ethyliodide when hated with sodium in dry ether gives pure :

(a) C_4H_{10} (b) C_2H_6

(c) C_3H_8 (d) C_2H_5OH

33. For the reaction

$CH_3–CH=CH_2 + HOCl \rightarrow A$ the product A is :

(a) $CH_3-CHCl-CH_2OH$

(b) $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_2-CL$

(c) $CH_3-CH_2-CH_2-COCl$

(d) $CH_3-\underset{\displaystyle OH}{\underset{|}{\overset{\displaystyle Cl}{\overset{|}{C}}}}-CH_3$

34. Which of the following is not correct for ionic crystals ?

(a) They possess high melting point and boiling point

(b) All are electrolyte

(c) Exhibit the property of isomorphism

(d) Exhibit directional properties of the bond

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35. Which of the following is not true in Rutherford's nuclear model of atom ?

(a) Protons and neutrons are present inside nucleus

(b) Volume of nucleus is very small as compared to volume of atom

(c) The number of protons and neutrons are always equal

(d) the number of electrons and protons are always equal

36. All the s-block elements of the periodic table are placed in the groups ……..

(a) IA and IIA (b) IIIA and IVA

(c) B sub groups (d) VA to VILA

37. The magnetic quantum number for d-orbital is given by :

(a) 2 (b) 0,±1,±2

(c) 0,1,2 (d) 5

38. Which of the following molecule has zero dipole moment ?

(a) BF_3 (b) NH_3

(c) $CHCL_3$ (d) H_2O

39. In the process, $O_2^+ \rightarrow O^{2+}_2 + e^-$ the electron lost is form :

(a) bonding ®-orbital

(b) antibonding ®-orbital

(c) $2p_z$ orbital

(d) $2p_x$ orbital

40. Bond between A and B can be represented by

$A-B$, A^+B^-, A^-B^+

(I) (II) (III)

If A is more electronegative than B,then least contribution to the actual structure comes from :

(a) I (b) II

(c) III (d) all the structure have equal contribution

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41. The complex formed in ring test of qualitative analysis for NO^-_3 ion is :

(a) $[Fe(H_2O)_5NO]SO_4$

(b) $[Fe(H_2O)_5NO_2]SO_4$

(c) $[Fe(NO)_5H_2O]SO_4$

(d) $FeSO_4 . NO$

42. SiF_4 gets hydrolysed giving :

(a) SiO_2 (b) $Si(OH)_2F_2$

(c) H_2SiF_6 (d) $Si(OH)_4$

43. All ores are minerals,while all minerals are not ores,because :

(a) the metal can not be extracted economically from all the minerals

(b) minerals are complex compound

(c) the minerals are obtained from mines

(d) all these are correct

44. In the reaction ,

$P_2O_5 + 3Cao \rightarrow Ca_3(PO_{4)2}$, P_2O_5 acts as :

(a) Acidic flux (b) basic flux

(c) basic impurity (d) acidic impurity

45. In the given reaction,the oxide of sodium is :

$$\begin{pmatrix} 4Na + _{O_2} \rightarrow 2Na_2O \\ Na_{2+H_2O\,.\,2NaOH} \end{pmatrix}$$

(a) Acidic (b) basic

(c) amphoteric (d) neutral

46. When CO_2 is passed through solution of calcium hydroxide,which one of the following compound is precipitated ?

(a) $Ca(HCO_3)_2$ (b) Cao

(c) $CaCO_3$ (d) $Ca(OH)_2$

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47. ferric alum has the composition $(NH_4)_2SO_4 . Fe_2(SO_4)_3 . x H_2O$ the value of x is :

(a) 7 (b) 24

(c) 6 (d) 15

48. What is the general electronic configuration for 2nd row transition series ?

(a) $[Ne]3d^{1-10},4s^2$

(b) $[Ar]3d^{1-10},4s^{1-2}$

(c) $[Kr]4d^{1-10},5s^{1-2}$

(d) $[xe]5d^{1-10},5s^{1-2}$

49. The existence of two different coloured complexes of $[Co(NH_3)_4CL_2]^+$ is due to :

(a) ionization isomerism

(b) co-ordination isomerism

(c) linkage isomerism

(d) geometrical isomerism

50. IUPAC name of the compound

$CH_3-CH-CH_2-CH-CH_3$ is :

| |

OH CH_3

(a) 4-methy pentene-2-ol

(b) 2-methy pentanol-4

(c) 4,4-dimethyl-butane-2-ol

(d) 4-methyl pentane-2-ol

51. Alky halide on heating with alc.NH_3 in a sealed tube results

(a) 1^o amine (b) 2^o amine

(c) 3^0 amine (d) all of these

52. Among $H-CHO$, CH_3CHO and C_6H_5CHO, which will undergo Cannizaro's reaction ?

(a) HCHO and CH_3-CHO

(b) CH_3-CHO and C_6H_5ChO

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(c) C_6H_5CHO and HCHO

(d) All the above

53. The main product of the reaction of CH_3CONH_2 with Br_2 in aqueous potassium hydroxide medium is :

(a) $CH_3-CH_2-NH_2$

(b) CH_3Br

(c) $CH_3CONHBr$

(d) CH_3NH_2

54. In the reaction,

$$HCHO + CH_3MgI \xrightarrow{H_2O} A \rightarrow B$$ what are A and B ?

(a) CH_3OMgI and CH_3-OH
(b) CH_3CH_2OMgI and $C_2H_5-O-C_2H_5$
(c) CH_3CH_2OMgI and CH_3-CH_2-OH
(d) CH_3-CH_2-I and CH_3-CH_2-OH

55. Acetylation of a secondary amine in alkaline medium yields :

(a) N,N dialky l acetamide

(b) N,N dialky l amine

(c) N,N dialky l amide

(d) acety l dialky l amine

56. In acid medium nitrobenzene is reduced to anline as shown in the reaction $C_6H_5-NO_2 + 6[H] \rightarrow C_6H_5-NH_2+2H_2O$

The reducing agent used in this reaction is :

(a) $LiA1H_4$ (b) Sn/HCL

(c) Na/Alcohol (d) H_2/Ni

57. PVC is used for :

(a) manufacture of cosmetics

(b) manufacture of tyres

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(c) manufacture of nonstick pans

(d) manufacture of plastic pipes

58. Acety l salicylic acid is used as :

(a) anti oxidant

(b) analgesic drug

(c) anti biotic drug

(d) anaesthetic

59. C_6H_6 consists of one ring,while napthlene consists of two rings.Both are them are aromatic and obey the (4n+2)rule.Thus the number of ®-electrons inside rings of C_6H_6 and naphthalene are respectively :

(a) 3,5 (b) 5,10

(c) 6,10 (d) 6,12

60. In the oxidation of $C_6H_5-CH_2-CH_3$ by $KMnO_4$ the product formed is :

(a) $C_6H_5-CH_2-CHO$

(b) $C_6H_5-CH_2-COOH$

(c) C_6H_6-COOH

(d) $C_6H_5-CH_2-OH$

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